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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/706,838	11/12/2003	Jei-Wei Chang	HTIRC03-008	6929

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EXAMINER
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TUGBANG, ANTHONY D

ART UNIT	PAPER NUMBER
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3729

DATE MAILED: 04/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/706,838

Applicant(s)

CHANG ET AL.

Examiner

A. Dexter Tugbang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 27 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) 7-32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 1/29/04.

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election with traverse of the invention of Group I-A, Claims 1-6, in the reply filed on February 27, 2006 is acknowledged. The traversal is on the ground(s) that the searches for all of the inventions would be co-extensive and that the reasons for distinctness between the inventions are speculative at best and have nothing to do with the claims in the present application. This is not found persuasive because each invention has its own distinctness by the explicit language utilized in the claims (as noted in the previous Office Action) and that these reasons for distinctness present clear and separate lines of patentability that would require non-coextensive searches, thus, presenting a burden on the examiner to search and examine all of the inventions.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 7-32 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on February 27, 2006.

### ***Specification***

3. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions,

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wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

4. The abstract of the disclosure is objected to because the content is not directed to the claimed invention, i.e. process of making as noted in at least Claim 1. Correction is required.

See MPEP § 608.01(b).

5. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: A Process of Manufacturing a Narrow Track CPP Head with Bias Cancellation.

### ***Claim Objections***

6. Claim 1 is objected to because of the following informalities.

In Claim 1, the phrase of “on its top surface” (line 2) should be replaced with –on a top surface of the GMR stack--; and the phrase of “its central area” (line 7) should be replaced with –a central area of said device--.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

8. Claims 1-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In Claim 1, the phrases of “said removed portions” (line 4) and “removed portions” (line 6), are each misleading, confusing, rendering the claims as being vague and indefinite. For example, if portions of the bias cancellation layer are removed, then the so-called “removed portions” are no longer part of the device. So how it is possible for these “removed portions” (that are no longer part of the device because they have been removed) to extend inwards a distance from the hard magnetic layers and to be covered with a layer of insulation?

In Claim 6, the phrase of “between about 1 and 20%” (line 2) is confusing and misleading and simply not understood, because the phrase refers to a signal strength with no units of measurement. A signal strength of 1 to 20% of what?

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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10. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hasegawa 2002/0024775 in view of Hayakawa 6,252,749.

Hasegawa discloses a method comprising: providing a GMR stack (e.g. layers 5, 7) having on a top surface of the GMR stack, a bias cancellation layer (e.g. 10, in Fig. 7) located between opposing hard magnetic layers (e.g. 32); and removing portions of the bias cancellation layer with a remaining portion of the bias cancellation layer extending a distance from the hard magnetic layers (see sequence of Figs. 8 to 9).

Regarding Claim(s) 2, Hasegawa further teaches that the bias cancellation layer comprises an antiferromagnetic layer on an exchange dilution layer (paragraph [0159]).

Regarding Claim(s) 3, Hasegawa further teaches that the distance of the portions that were removed extend inwards from the hard magnetic layers at 0.03 microns (see paragraph [0176]).

Regarding Claim(s) 5 and 6, Hasegawa further teaches that the bias cancellation layer is deposited to a thickness of 8 nm (e.g. 80 Angstroms, see paragraph [0162]) and that the signal strength is between 1 to 20%, absent any recited units of measurement for the signal strength.

Hasegawa does not teach covering the magnetic layers and remaining portions of the bias cancellation layer with a layer of insulation where current that flows through the device is constrained to flow through the central area of the device (as required at lines 6-7 of Claim 1).

Hayakawa discloses a process that includes covering hard magnetic layers (e.g. 4 in Fig. 1) and remaining portions of a bias cancellation layer (e.g. 16) with a layer of insulation (e.g. gap insulation layer 6) for the purpose of enhancing thermal conductivity while maintaining insulation properties of the device (see col. 8, lines 4-8).

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Regarding Claim(s) 4, Hayakawa further teaches that hard magnetic layers can be made of Co-Cr-Pt (see col. 6, lines 54-58).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Hasegawa by including the step of covering the hard magnetic layers and portions of the bias cancellation layer with a layer of insulation, as well as utilize the material composition of Co-Cr-Pt for the hard magnetic layers, all of which is taught by Hayakawa, for the advantages of enhancing thermal conductivity and maintaining insulation properties of the device.

### ***Conclusion***

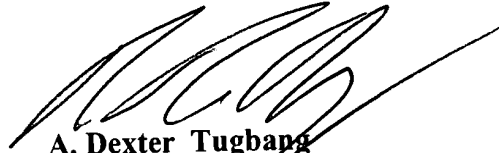
11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Dexter Tugbang whose telephone number is 571-272-4570. The examiner can normally be reached on Monday - Friday 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 571-272-4690. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**A. Dexter Tugbang**  
**Primary Examiner**  
**Art Unit 3729**

April 3, 2006